

ABSTRACT

An electric machine having a stator assembly that includes a stator core and a coil supported by the stator core and a rotor assembly that includes a shaft and a rotor supported by the shaft that is in magnetic interaction with the stator core. The electric machine may include a single sensor configured to detect magnetic polarities of the rotor as the rotor rotates relative to the sensor and to generate a signal representing the detected magnetic polarities of the rotor. The signal and an inverted version of the signal are utilized to control current through the coil. The current may be controlled indirectly by controlling the application of voltage to the coil. The sensor may be encapsulated on a circuit board to positively position the sensor relative to the circuit board. The circuit board may be mounted to a bearing housing of the electric machine. The sensor may be received in a pocket of a bearing housing of the electric machine so the sensor is positively positioned relative to the rotor. The rotor may be connected to the shaft with an encapsulation material. The rotor may be formed as a single cylinder of ferrite. A tapered air gap may be formed between a portion of the stator core and a corresponding portion of the rotor. The electric machine may be a C-frame electric motor with the I-bar portion formed of grain-oriented electric steel.